Forklift Hydraulic Control Valves

Forklift Hydraulic Control Valve - The function of directional control valves is to route the fluid to the desired actuator. Normally, these control valves comprise a spool situated in a housing made either of cast iron or steel. The spool slides to different positions in the housing. Intersecting grooves and channels direct the fluid based on the spool's location.

The spool is centrally situated, help in place with springs. In this particular location, the supply fluid could be blocked and returned to the tank. If the spool is slid to one direction, the hydraulic fluid is routed to an actuator and provides a return path from the actuator to tank. When the spool is moved to the opposite side, the supply and return paths are switched. When the spool is enabled to return to the center or neutral place, the actuator fluid paths become blocked, locking it into place.

Typically, directional control valves are built in order to be stackable. They generally have a valve per hydraulic cylinder and one fluid input which supplies all the valves inside the stack.

Tolerances are maintained really tightly, to be able to handle the higher pressures and to prevent leaking. The spools will usually have a clearance inside the housing no less than 25 Âµm or a thousandth of an inch. To be able to prevent distorting the valve block and jamming the valve's extremely sensitive components, the valve block would be mounted to the machine' frame with a 3-point pattern.

A hydraulic pilot pressure, mechanical levers, or solenoids may actuate or push the spool left or right. A seal enables a portion of the spool to protrude outside the housing where it is easy to get to to the actuator.

The main valve block controls the stack of directional control valves by capacity and flow performance. Several of these valves are designed to be proportional, like a proportional flow rate to the valve position, while some valves are designed to be on-off. The control valve is among the most sensitive and expensive parts of a hydraulic circuit.